

# Quality Assurance Plan (QAP)

*Prepared for:*

**Department of Energy**

*DOE-QAP-00-02*

**February 17, 2005**

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**REVISION HISTORY**

Revision Level	Date	Description	Change Summary
DOE-QAP-00-01	11/17/05	Initial document	N/A

## Contents

<b>REVISION HISTORY .....</b>	<b>ii</b>
<b>1.0 PREFACE.....</b>	<b>1</b>
1.1 PURPOSE .....	1
1.2 REFERENCED DOCUMENTS .....	1
<b>2.0 INTRODUCTION.....</b>	<b>1</b>
<b>3.0 CRITERION 1 – PROGRAM .....</b>	<b>2</b>
3.1 RESPONSIBILITIES .....	2
3.2 GRADED APPROACH .....	3
3.3 PREVENTIVE AND CORRECTIVE ACTION .....	4
<b>4.0 CRITERION 2 – PERSONNEL TRAINING AND QUALIFICATION.....</b>	<b>5</b>
4.1 INTRODUCTION .....	5
4.2 RESPONSIBILITIES .....	5
4.3 QUALIFICATION OF PERSONNEL .....	5
4.4 TRAINING.....	5
4.5 TRAINING PLANS .....	5
<b>5.0 CRITERION 3 – QUALITY IMPROVEMENT .....</b>	<b>6</b>
5.1 INTRODUCTION .....	6
5.2 IDENTIFICATION OF QUALITY PROBLEMS .....	6
5.3 RESOLUTION OF QUALITY PROBLEMS.....	6
5.4 QUALITY IMPROVEMENT.....	6
<b>6.0 CRITERION 4 – DOCUMENTS AND RECORDS .....</b>	<b>7</b>
6.1 INTRODUCTION .....	7
6.2 DOCUMENTS .....	7
6.3 RECORDS .....	8
<b>7.0 CRITERION 5 – WORK PROCESSES.....</b>	<b>8</b>
7.1 INTRODUCTION .....	8
7.2 WORK PERFORMANCE .....	9
7.3 ITEM IDENTIFICATION AND USE CONTROL.....	9
7.4 ITEM PROTECTION.....	9
7.5 EQUIPMENT CONTROL .....	9
<b>8.0 CRITERION 6 – DESIGN .....</b>	<b>9</b>
8.1 INTRODUCTION .....	9
8.2 DESIGN INPUT.....	9
8.3 DESIGN PROCESS .....	9
8.4 DESIGN OUTPUT .....	10
8.5 DESIGN VERIFICATION.....	10
8.6 DESIGN CHANGES .....	10
8.7 SUSPECT/COUNTERFEIT ITEMS.....	10
<b>9.0 CRITERION 7 – PROCUREMENT.....</b>	<b>11</b>
9.1 INTRODUCTION .....	11

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9.2	PROCUREMENT DOCUMENTS .....	11
9.3	SUPPLIER QUALIFICATIONS.....	11
9.4	SUPPLIER PERFORMANCE MONITORING .....	11
9.5	INSPECTION.....	11
9.6	SUPPLIER DOCUMENTATION .....	11
9.7	SUSPECT/COUNTERFEIT ITEMS.....	12
9.8	PROCUREMENT OF SAFETY GRADE ITEMS FOR NUCLEAR FACILITIES/ACTIVITIES .....	12
<b>10.0</b>	<b>CRITERION 8 – INSPECTION AND ACCEPTANCE TESTING .....</b>	<b>12</b>
10.1	INTRODUCTION .....	12
10.2	PROCESS .....	12
10.3	CONTROL OF MEASUREMENT AND TESTING EQUIPMENT.....	12
<b>11.0</b>	<b>CRITERION 9 – MANAGEMENT ASSESSMENT.....</b>	<b>13</b>
11.1	INTRODUCTION .....	13
11.2	RESPONSIBILITY.....	13
11.3	PROCESS .....	13
11.4	RESULTS .....	13
<b>12.0</b>	<b>CRITERION 10 – INDEPENDENT ASSESSMENT.....</b>	<b>13</b>
12.1	INTRODUCTION .....	13
12.2	PERFORMING ORGANIZATION .....	14
12.3	PROCESS .....	14
12.4	RESULTS .....	14
<b>APPENDIX A.</b>	<b>CANDIDATE PERFORMANCE MEASURES AND METRICS.....</b>	<b>15</b>
A.1	QUALITY ASSURANCE.....	15
A.2	SOFTWARE DEVELOPMENT AND MAINTENANCE.....	15
A.3	PROJECT OR DEVELOPMENT METRICS .....	15
A.4	CUSTOMER-RELATED METRICS .....	16
A.5	NETWORK ENGINEERING .....	16
A.6	CYBER FORENSICS .....	16
A.7	CUSTOMER SERVICES.....	17
A.8	INFORMATION ASSURANCE.....	18

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## Tables

Table 1. Definitions of Consequences .....	3
Table 2. Assignment of Integrity Levels.....	3
Table 3. Four-Level Software Integrity Scheme.....	4

## 1.0 PREFACE

*Quality is a way of life for **TEAM DOE**. We believe in it, we understand it, we practice it. We realize that superior quality is an integral part of every service and product delivered to DOE. We will implement a Quality Management System (QMS) to ensure delivery of superior quality products and services supporting DOE's mission. Our Project Managers will be held accountable for quality at the task and subtask level. Our approach includes front-end incorporation of QA standard approaches and practices (e.g., ISO and SEI CMMi) across the enterprise coupled with empowered QA teams to identify and address issues as they arise. **TEAM DOE**'s goal is to drive quality into every service and product while gaining efficiencies, reducing cycle times, and streamlining implementation. We will establish a QA Office (QAO) that reports directly to our Program Manager. The QAO will be independent from all service delivery, development, or transactional processing functions in order to maintain its impartiality. The QAO will institutionalize and optimize QA processes, reviews, and associated plans. **The result—products and services done right the first time, every time.***

### 1.1 PURPOSE

This document describes **TEAM DOE**'s Quality Assurance (QA) Plan in support of the Department of Energy's (DOE) Information Technology Support Services A-76 Study, RFP # DE-RP01-04IM00054, and Statement of Work (SOW) and its associated revisions. This QA Plan facilitates an active quality program between **TEAM DOE** and DOE. It details the policies, processes, and guidelines that address important aspects of our Quality Management System (QMS).

The purpose of the QA Plan is to meet the requirements of DOE O 414.1A, "Quality Assurance," Attachment 1, "Requirements Document" (CRD). That document mandates the creation of a QA plan for the work specified in the contractor's contract, by applying the quality assurance criteria defined in the CRD.

### 1.2 REFERENCED DOCUMENTS

The following documents were referenced throughout this document:

- DOE O 414.1A, "Quality Assurance"
- 48 CFR 970.5204-2, Safety Management System Description
- DOE G 414.1-2A, "Quality Assurance Management System Guide for use with 10 CFR 830.120 and DOE O 414.1", dtd 06-17-99

## 2.0 INTRODUCTION

To accomplish the DOE missions and objectives, DOE and its contractors are responsible for a wide range of work activities, as well as the management and oversight functions relating to these activities. This work must be accomplished safely while minimizing potential hazards to the public, site or facility workers, and the environment. The criteria of 10 CFR 830.120, *Quality Assurance*, and DOE O 414.1, "Quality Assurance," are used to provide a quality management system for accomplishing and assessing DOE's work in accordance with all requirements. The system is compliant with and integrated with the safety management system (ISMS) required by DOE P 450.4, "Safety Management System Policy." It defines processes and tools to ensure that the ISMS achieves its objectives. A comprehensive management system will result from integrated quality and safety expectations, ensuring the safe accomplishment of the DOE mission and objective assessment of DOE performance. The content of the management system ultimately is based on DOE's unique responsibilities and customer expectations.

The quality attained in a product or service is described by the extent to which that product or service satisfies the requirements, needs, and expectations of the customer. The attainment of quality is the responsibility of each member of the organization. The quality requirements of 10 CFR 830.120 and DOE O 414.1 provide the framework for a results-oriented management system that focuses on performing work safely and meeting mission and customer expectations while allowing the organization to become more efficient through process improvement.

The principal factor representing the performance of an organization is the quality of its products and services. The QA Order requires that an organization develop, document, and maintain an effective QA program, hereafter referred to as a quality management system (QMS). The goal of the QMS is delivery of safe, reliable products and services that meet or exceed customer needs and expectations. To do so, the QMS must describe methods for planning, performing, and assessing the adequacy of work, including work assigned to parties outside the organization.

**TEAM DOE** believes that continuous improvement of all processes and procedures will benefit the team and, ultimately and most importantly, DOE. Using this approach, we will:

- Ensure customer satisfaction by institutionalizing QA processes to do things right the first time, every time
- Initiate proactive service level management by responding to potential lapses in customer service before they affect customer satisfaction
- Validate, track, and measure service level performance for broad-based adjustments of customer service models

**TEAM DOE** will integrate quality up front to: (1) systematically define the activities necessary to meet or exceed the requirements stated in the PWS; (2) establish clear responsibility and accountability for managing key activities; (3) analyze and measure the capability of key activities; (4) identify the interfaces of key activities within and between the functions of the organization, including cybersecurity; (5) focus on factors such as resources, methods, and materials that will improve the products and services supporting the four functional areas supporting DOE's objectives; and (6) evaluate the risks, consequences, and impacts of activities on DOE customers, suppliers, and other interested parties.

### **3.0 CRITERION 1 – PROGRAM**

The Requirements Document (CRD) provides quality assurance criteria that must be applied to the contractor's quality management program. The quality management program uses a graded approach to apply the criteria, integrates all safety and quality requirements incorporated by reference into the contract, and applies to all subcontractors and suppliers used on the contract.

#### **3.1 RESPONSIBILITIES**

While each individual is responsible for performing quality work and producing quality products, **TEAM DOE** management has the overall responsibility for ensuring that the quality management system is developed, maintained, and followed. Within **TEAM DOE**, that responsibility falls on the Quality Manager as the lead for our Quality Assurance office. The Quality Manager will be responsible for ensuring that this QAP is both understood and implemented. The **TEAM DOE** Quality Manager is also responsible for creating and maintaining a culture within the organization that embraces quality improvement techniques and activities at all levels.

In order to effectively meet the performance objectives of this contract, **TEAM DOE** shall:

- establish task assignments;

- identify lines of communication;
- determine and provide the necessary resources and environment to accomplish the required activities;
- ensure employees are trained appropriately and are capable of performing task assignments;
- obtain timely, objective feedback on the effectiveness of planning and work to meet performance measures; and
- involve all employees to ensure that improvements are identified and implemented to enhance performance.

### 3.2 GRADED APPROACH

**TEAM DOE** will implement a task-level assessment plan for the major PWS functional areas. Assessments will be performance-based and evaluate task-level standard operating procedures (SOPs) developed and implemented to meet established service levels and metrics. The keystone of our assessment methodology is the End-to-End Service Readiness Review, which will result in an Enterprise-wide Service Quality “Balanced Scorecard” used to assess service quality and performance across **TEAM DOE**. Our Quality Manager and staff will conduct periodic assessments of the performance of all task-level services. Self-assessments and reviews will be conducted periodically.

Our PMs will be held accountable for quality and for ownership of issues (e.g., inefficiencies, gaps in performance, etc.) to resolve them. Each PM’s performance elements will include a quality element tying his or her performance during the appraisal period to the quality performance needed to achieve DOE’s business objectives.

**Table 1** provides a definition of the consequences of errors in products or services delivered under the contract. Each product or service will be evaluated and assigned an error consequence value.

**Table 1. Definitions of Consequences**

Consequence	Definitions
Catastrophic	Loss of human life, complete mission failure, loss of system security and safety, or extensive financial or social loss.
Critical	Major and permanent injury, partial loss of mission, major system damage, or major financial or social loss.
Marginal	Severe injury or illness, degradation of secondary mission, or some financial or social loss.
Negligible	Minor injury or illness, minor impact on system performance, or operator inconvenience.

Each cell in **Table 2** assigns an integrity level based upon the combination of an error consequence and the likelihood of occurrence of an operating state that contributes to the error. Some table cells reflect more than one integrity level indicating that the final assignment of the integrity level can be selected to address the product or service and risk mitigation recommendations.

**Table 2. Assignment of Integrity Levels**

Error Consequence	Likelihood of occurrence of an operating state that contributes to the error			
	Reasonable	Probable	Occasional	Infrequent
Catastrophic	4	4	4 or 3	4
Critical	4	4 or 3	3	2 or 1
Marginal	3	3 or 2	2 or 1	1
Negligible	2	2 or 1	1	1

An integrity level 0 (zero) may be assigned if there are no consequences associated with an error that may occur. In addition to performing testing, software will be subjected to Verification and Validation (V&V). The four-level integrity scheme described in **Table 3** will be used as a method to define the minimum V&V tasks that are assigned to each software integrity level:

**Table 3. Four-Level Software Integrity Scheme**

Criticality	Description	Level
High	Selected function affects critical performance of the system.	4
Major	Selected function affects important system performance.	3
Moderate	Selected function affects system performance, but workaround strategies can be implemented to compensate for loss of performance.	2
Low	Selected function has noticeable effect on system performance, but only creates inconvenience to the user if the function does not perform in accordance with requirements.	2 or 1

### 3.3 PREVENTIVE AND CORRECTIVE ACTION

We will establish and maintain a problem reporting and corrective action system to ensure that causes of service and product deficiencies are eliminated. We will leverage the QMS and generate task-level standard operating procedures enterprise-wide. Inefficiencies and gaps in performance that directly or indirectly impact quality and service delivery will be addressed using process mapping, root cause analysis, and statistical process control (defined below) to realize efficiencies, improve service and product quality, and reduce cycle times.

- **Process Mapping** – Illustration that allows **TEAM DOE** staff to visualize an entire process and identify areas of strength and weaknesses. It helps reduce cycle time and defects while recognizing the value of individual contributions.
- **Root Cause Analysis** – Study of original reason for nonconformance with a process. When the root cause is removed or corrected, the nonconformance will be eliminated.
- **Statistical Process Control** – Application of statistical methods to analyze data, and study and monitor process capability and performance.

## **4.0 CRITERION 2 – PERSONNEL TRAINING AND QUALIFICATION**

### **4.1 INTRODUCTION**

Personnel must be able to perform their assignments in order to effectively accomplish DOE's tasks. Qualification and training processes help ensure that personnel possess the experience, skills, and abilities commensurate with their responsibilities.

### **4.2 RESPONSIBILITIES**

Senior management shall commit resources to develop, implement, and maintain a training and qualification process for the contract. Each level of the organization shall provide input to the overall training process and plan by providing documentation regarding their specific qualification and training needs. The documentation shall include requirements, interfaces, training methods, training responsibilities, and duties of the organizations.

### **4.3 QUALIFICATION OF PERSONNEL**

Each member company of *TEAM DOE* follows an internal process for personnel selection. The process includes the development of a job description, which includes minimum levels of education, experience, skill level, and physical condition.

### **4.4 TRAINING**

Training can be provided under three general categories: project/task-specific, site/facility-specific, and institutional. Project/task-specific training addresses goals and schedules, processes and procedures, safety, methods, process metrics, and skills. Site/facility-specific training provides safety, emergency plans, security, and operations information that applies directly to the physical site/facility location. Institutional training provides general information about the organization's mission, vision, goals, and management system,

### **4.5 TRAINING PLANS**

Training plans shall be prepared for all functions. Initial training requirements define those functions necessary to perform the work, and continuing training maintains and promotes improved job performance. The training plans shall also specify the type of training records to be maintained.

## **5.0 CRITERION 3 – QUALITY IMPROVEMENT**

### **5.1 INTRODUCTION**

Processes to detect and prevent quality problems must be established and implemented. Items, services, and processes that do not meet established requirements must be identified, controlled, and corrected according to the importance of the problem and the work affected. Correction must include identifying the causes of problems and working to prevent recurrence. Item characteristics, process implementation, and other quality-related information must be reviewed and the data analyzed to identify items, services, and processes needing improvement.

### **5.2 IDENTIFICATION OF QUALITY PROBLEMS**

A quality problem should be identified, documented, and evaluated to determine significance. Effective feedback from multiple sources is the foundation for processes designed to prevent, identify, and correct problems. The least desirable form of feedback results from accidents or unplanned events that self-disclose the quality problem. If the quality problem is likely to affect safety or mission significantly, the impacted items or processes should be controlled to prevent their further use. Problems that are not likely to be significant, and that cannot be readily corrected on the spot, should be identified and documented (e.g., by logging), and handled in an expedient manner.

### **5.3 RESOLUTION OF QUALITY PROBLEMS**

The quality problem resolution process follows:

- A condition adverse to quality is identified.
  - ◆ May come from feedback from workers or from internal and external customers.
- Its significance is evaluated.
  - ◆ Significance is determined using the graded approach defined previously.
- The problem is analyzed and its causes are determined.
  - ◆ Various root cause analysis methods may be used.
- The planned actions are reported to the organization identifying the problem.
- Prompt corrective (remedial) action is taken and documented.
- Steps are taken to prevent recurrence.
- The actions are replicated where appropriate.
  - ◆ Identification of areas where the problem occurs is critical.
- Implementation is verified.
- Closure is documented.
- Effectiveness of corrective and preventive actions for problems is determined and measured.
  - ◆ Feedback is incorporated into the problem area and overall problem resolution process.

### **5.4 QUALITY IMPROVEMENT**

*TEAM DOE*'s quality improvement process is applied to all item characteristics, processes, and any other quality-related information to encourage and facilitate continuous process improvement (CPI). Application of CPI results in a focus on every product and service produced under the contract. As daily processes and products are identified, documented, and measured, that data is fed back into the process or product, and it is used to reduce variation, remove activities that have no value-add, and improve customer satisfaction. The traditional approach to CPI has four phases:

1. **Plan** to improve operations first by finding out what things are going wrong (that is identify the problems encountered), and come up with ideas for solving these problems.
2. **Do** changes designed to solve the problems on a small or experimental scale first. This minimizes disruption to routine activity while testing whether the changes will work or not.
3. **Check** whether the small scale or experimental changes are achieving the desired result or not. Also, continuously check nominated key activities (regardless of any experimentation going on) to ensure that the quality of the output is known at all times in order to identify any new problems when they crop up.
4. **Act** to implement changes on a larger scale if the experiment is successful. This means making the changes a routine part of the activity. Also Act to involve other persons (other departments, suppliers, or customers) affected by the changes and whose cooperation is needed to implement them on a larger scale, or those who may simply benefit from what has been learned.

This methodology is the basis for all quality improvement activities on the contract.

## **6.0 CRITERION 4 – DOCUMENTS AND RECORDS**

### **6.1 INTRODUCTION**

Documents and records are required to effectively manage, perform, and assess work.

Documents and records should include applicable requirements to indicate that work (including safety) has been properly specified and accomplished. **TEAM DOE** will identify any documents and records that must be developed and controlled. **TEAM DOE** will commit the resources necessary to accomplish the document and record requirements.

### **6.2 DOCUMENTS**

Documents must be prepared, reviewed, approved, issued, used, and revised to prescribe processes, specify requirements, or establish design. The document control system to be used will be As-One. As-One implements portals to allow project team members to customize their workspace with the information that pertains to them. Generically, a portal is a summary of a larger set of data and it provides access to more detailed information. As-One Portals contain information that allows the user to achieve successful project management. A user can have the following portals on their workspace:

- Programs/Projects – Displays list of projects for which an employee is a member and provides general administrative functions for the project set-up, including adding resources to the project. Programs or portfolios can be set up in this portal as well, allowing the staff member to group projects and view selected data from these projects simultaneously. The project status and security are also maintained in the portal.
- Task/Resources – Displays tasks and resources defined for the project(s) selected in the Project list box.
- Events – Displays events for the project selected in the Project list box. Events are meetings, milestone reviews, QA evaluations, peer reviews, teleconferences, and other significant occurrences for a project.
- Actions – Displays action items for the project selected in the Project list box.
- Work Products – Displays the work products being developed by a project. Work products may be internal or formally released products such as documents or software builds.

- Contacts – Displays contact information such as phone number and email for people associated with the organization or projects.
- Knowledge Library – Displays a list of items, which have been entered in the knowledge library for sharing among team members. Knowledge library items may be Best Practices, Lessons Learned, Process Standards, or Project Documentation.
- Discrepancies – Displays a list of defects captured for a project. Defects or discrepancies are issues that impact a work product or objective of the project.
- Requirements – Displays a list of requirements defined by the project. Requirements can be at a system level or more detailed level and each requirement is associated with one or multiple work products.
- Metrics – Displays a project's measurable attributes as defined by the organization and project such as Lines of Code and Defects per Month. As-One provides a set of default measures, but others may be added by the organization's administrator. Graphs can also be generated from data collected by using As-One as the daily project tool.
- Risks – Displays a list of risks (or issues) identified by the project, which require mitigation and contingency planning. Risks are potential problems that have not yet occurred, but would have impact on the project if they occurred.
- Discussions – Displays a list of discussion topics generated by the team members. Discussion topics are documented threads of interest where team members can reply. Here information can be collaborated real-time.
- Change Logs – Displays a list of change logs proposed for the project. Change logs are proposed or approved contract modifications that effect baselines such as on the project(s) Requirements and Work Products.
- External Links – Displays external URL links to share within individual projects or across the entire organization. This provides the advantage of easy access to external information pertinent to the project(s) or organization.

The information maintained in each portal is integrated with information in other portals. For example, Tasks are linked to Work Products, which can be linked to Events, Action Items, Discrepancy Reports, Change Logs, Metrics, Requirements, and Knowledge Library. The system performs the necessary configuration management functions needed to ensure that the correct versions of documents are always available.

### **6.3 RECORDS**

Records will be specified, prepared, reviewed, approved and maintained in accordance with DOE's Records Management Program and the DOE approved records retention and disposition schedule (RRDS).

## **7.0 CRITERION 5 – WORK PROCESSES**

### **7.1 INTRODUCTION**

All work performed under the contract will be documented and controlled as a process. Each process consists of a series of actions planned and carried out by qualified personnel, using specified work processes and equipment under administrative, technical, and environmental controls established by the QAO.

## **7.2 WORK PERFORMANCE**

Work must be performed to established technical standards and administrative controls, using approved instructions, procedures, or other appropriate means. Appendix A contains a list of current work instructions, and work instructions that are in-progress or scheduled for documentation.

## **7.3 ITEM IDENTIFICATION AND USE CONTROL**

Items must be identified and controlled to ensure their proper use. Configuration management (CM) procedures are used to identify and control the items used on this contract. The CM procedures are located on the As-One portal.

## **7.4 ITEM PROTECTION**

Items must be maintained to prevent their damage, loss, or deterioration. No sensitive or perishable items are used on this contract. For example, temperature control is required for the network server equipment; this equipment is located in a government-furnished space that has the necessary environmental controls in place.

## **7.5 EQUIPMENT CONTROL**

Equipment used for process monitoring or data collection must be maintained and operated with all current revisions. These systems include, but are not limited to, Network traffic monitors, Intrusion Detection Systems, Firewall Systems, Workstation Management Systems, Email Filtering Systems, Web Filtering Systems, and Patch and Virus Management Systems.

# **8.0 CRITERION 6 – DESIGN**

## **8.1 INTRODUCTION**

A formal design process shall be established that provides control of design inputs, outputs, verification, configuration and design changes, and technical and administrative interfaces appropriate to the importance of the design. Design work shall be based on sound engineering judgment, scientific principles, and applicable codes and standards.

The design of items, such as structures, systems, and components (SSC) that involve a higher-than normal level of risk (including those items important to safety), should be subject to more definitive design process control and verification requirements. No SSCs are delivered under this contract. Design records shall include documentation of design input, calculations and analyses, engineering reports, design output, design changes, and design verification activities.

## **8.2 DESIGN INPUT**

During the functional design stage, the overall structure of the product is defined from a functional viewpoint. The functional design describes the logical system flow, data organization, system inputs and outputs, processing rules, and operational characteristics of the product from the user's point of view. The focus is on the functions and structure of the components that comprise the product. The goal of this stage is to define and document the functions of the product to the extent necessary to obtain the system owner and users understanding and approval and to the level of detail necessary to build the system design. All design work will be done in accordance with the DOE Systems Engineering Methodology (SEM).

## **8.3 DESIGN PROCESS**

Typical high-level design process activities for large-scale systems and software are:

1. Determine System/Product Structure
2. Design Content of System Inputs and Outputs
3. Design User Interface
4. Design System Interfaces and System Security Controls
5. Build Logical Model and Data Model
6. Develop Functional Design
7. Initiate Procurement of applicable Hardware and Software (*As appropriate*)
8. Conduct Structured Walkthrough(s) and Design Stage Exit (*As appropriate*)
9. Select System Architecture
10. Design Specifications for Modules
11. Design Physical Model and Database Structure
12. Develop Integration and System Test Plans
13. Develop Conversion Plan (*As appropriate*)
14. Develop System Design and Program Specifications
15. Define Coding Practices

#### **8.4 DESIGN OUTPUT**

Several work products are developed during this stage. Deviations in the context and delivery of these work products are determined by the size and complexity of a project.

Typical design phase outputs are:

- Design Specification Document (DSD)
- Entity Relationship Diagrams
- System Design Document
- Data Definitions
- Requirements Traceability Matrix – System Requirements
- Project Plan (Based on complexity/scope)
- Implementation Plan (Functional Design Doc)
- System Test Plan
- Security Plan (if applicable)
- Operational/Maintenance Procedures Document
- Functional/Logical Diagram(s)

#### **8.5 DESIGN VERIFICATION**

Quality reviews are necessary to validate the products and associated work products. The activities that are appropriate for quality reviews are peer reviews/structured walkthroughs, in-stage assessments, and stage exits. In addition, a Preliminary Design Review will be conducted. This review is an important milestone in the design process. The time and resources needed to conduct the walkthroughs and Functional Design Review shall be reflected in the project resources, schedule, and work breakdown structure.

#### **8.6 DESIGN CHANGES**

Design changes shall be controlled using CM procedures, found on the As-One portal. These procedures include configuration item identification, configuration status accounting, and auditing.

#### **8.7 SUSPECT/COUNTERFEIT ITEMS**

To avoid the procurement and use of suspect/counterfeit item, the following shall be incorporated into the procurement and acceptance process:

- Engineering staff involvement in procurement and product acceptance.
- Effective source inspection, receipt inspection, and testing programs.

## **9.0 CRITERION 7 – PROCUREMENT**

### **9.1 INTRODUCTION**

Procured items and services must meet established requirements and perform as specified. Prospective suppliers must be evaluated and selected on the basis of specified criteria. Processes to ensure that approved suppliers continue to provide acceptable items and services must be established and implemented.

This contract procures only those items that can be purchased using the government's credit card process. Additionally, estimates are gathered for the government when more expensive items are required; however, they are not purchased through this contract. The contractor is tasked to provide estimates, requirements, draft requests for proposal documents, etc. This is then used by the government to procure items that cannot be acquired using a credit card and/or exceed \$2,500.

### **9.2 PROCUREMENT DOCUMENTS**

If applicable, procurement documents shall clearly state test/inspection requirements and acceptance criteria for purchased items and services. Procurement documents shall include any specifications, standards, and other documents referenced in the design documents. Critical parameters and requirements, such as submittal, product related documentation, problem reporting, administrative documentation, personnel or materials qualifications, tests, inspections, and reviews, shall be specified when applicable.

### **9.3 SUPPLIER QUALIFICATIONS**

If applicable, potential suppliers shall be identified early in the design and procurement process in order to determine their capabilities. Prospective suppliers shall be evaluated to verify their capability to meet performance and schedule requirements.

### **9.4 SUPPLIER PERFORMANCE MONITORING**

If applicable, the qualified supplier's performance shall be evaluated periodically during the life of the contract to confirm its continuing capabilities. Suppliers shall be monitored to ensure that acceptable items or services are produced and schedule requirements are being met.

### **9.5 INSPECTION**

When applicable, the procurement process shall provide for identifying the need for inspections and tests. Requirements for inspections and tests shall be obtained from design documents. Inspections shall be adequate to ensure conformance with purchase requirements, including verification that specified documentation has been provided by the supplier. The inspection shall verify that items were not damaged during shipment.

### **9.6 SUPPLIER DOCUMENTATION**

Supplier-generated QA-related documents shall be accepted through the procurement system and controlled and processed by the end-user organization. These documents may include certificates of conformance, drawings, analyses, test reports, maintenance data, nonconformances, corrective actions, approved changes, waivers, and deviations.

## **9.7 SUSPECT/COUNTERFEIT ITEMS**

The selection of suppliers and the purchase of commercial-grade materials will be evaluated to prevent the procurement of suspect/counterfeit items and detect them before release for use.

## **9.8 PROCUREMENT OF SAFETY GRADE ITEMS FOR NUCLEAR FACILITIES/ACTIVITIES**

Safety grade items for use in nuclear facilities/activities are not purchased under this contract.

# **10.0 CRITERION 8 – INSPECTION AND ACCEPTANCE TESTING**

## **10.1 INTRODUCTION**

Inspections and tests are accomplished to verify that physical and functional aspects of items, services, and processes meet requirements and are fit for use and acceptance. Inspections and tests shall be identified early in the design process and specified in the design output documents.

Personnel shall check items prior to their use to ensure that the items are correct and suitable for their intended application. Personnel shall check their process output to verify that it meets or exceeds specified requirements.

## **10.2 PROCESS**

Inspection/test planning shall be performed. Appropriate sections of approved codes or standards may be used for acceptance requirements and inspection/test methods.

Inspections/tests shall be performed by technically qualified personnel who have the authority to access appropriate information and facilities in order to verify acceptance. These qualified personnel shall be independent of the activities being inspected/tested and shall have the freedom to report the results of the inspections/tests. Inspection/test results shall be evaluated and verified by authorized personnel to document that all requirements have been satisfied. Final acceptance shall be verified and documented by the organization having final responsibility for the item or process.

Inspection and test records shall, at a minimum, identify:

- item tested,
- date of test,
- tester or data recorder,
- observations,
- results and acceptability, and
- action taken concerning quality problems noted.

The inspection/test process shall identify the status of items, services, and processes requiring examination to ensure only those with acceptable inspection and test results are used. The process shall provide for review and reinspection/retest of changed inspection/test parameters.

## **10.3 CONTROL OF MEASUREMENT AND TESTING EQUIPMENT**

Measuring and Test Equipment (M&TE) used for inspection, tests, and monitoring or data collection must be maintained and calibrated. No M&TE equipment is used on this contract.

## **11.0 CRITERION 9 – MANAGEMENT ASSESSMENT**

### **11.1 INTRODUCTION**

Managers at every level shall periodically assess the performance of their organizations and functions to determine how well it meets customer requirements and expectations, and mission objectives, so that improvements can be made. This assessment shall address the use of human and material resources to achieve the organization's goals and objectives. The management assessment shall also include an introspective evaluation to determine if an integrated management program exists and if it focuses on meeting both customer requirements and strategic goals. Problems that hinder the organization from achieving its objectives shall be identified and corrected.

### **11.2 RESPONSIBILITY**

Project Managers shall perform management assessments. Delegating management assessment to a consultant or internal audit group will not be allowed.

### **11.3 PROCESS**

Strengths and weaknesses affecting the achievement of organizational objectives shall be identified so that meaningful action can be taken to improve processes. Those areas that present the greatest consequences of failure and the greatest benefit from improvements if implemented shall receive particular emphasis. Management assessments shall focus on identifying and resolving both singular and systemic management issues and problems that may prevent customer requirements and expectations from being met. Results from internal or external (e.g., Office of Oversight or Office of Enforcement and Investigation) independent assessments may be used as input to the management assessment.

Managers shall assess their processes for planning; organizational interfaces (internal and external to the organization); integration of management systems (e.g., safety, quality, project); use of performance metrics; training and qualifications; and supervisory oversight and support. Effective management assessments shall include an evaluation of such conditions as the state of employee knowledge, motivation, and morale; communication among workers; the existence of an atmosphere of creativity and improvement; and the adequacy of human and material resources.

### **11.4 RESULTS**

Management assessment results shall be documented and used as input to the organization's improvement process.

## **12.0 CRITERION 10 – INDEPENDENT ASSESSMENT**

### **12.1 INTRODUCTION**

*TEAM DOE* will establish and implement a process to obtain an independent assessment of the organizations' programs, projects, contractors, and suppliers. The purpose of this type of assessment is to evaluate the performance of work processes with regard to requirements, expectations of customers, and efforts required to achieve the mission and goals of the organization. The results of independent assessments provide an objective form of feedback to senior managers that is useful in confirming acceptable performance and shall be used for identifying improvement opportunities.

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## 12.2 PERFORMING ORGANIZATION

Independent assessments advise *TEAM DOE* managers on the quality of items, services, and processes produced by or for the organization. Consequently, the persons or organization conducting independent assessments shall report to a sufficiently high level in the overall organization. This will ensure organizational independence from the work and access to levels of management authority capable of directing subordinate levels to take actions in response to the assessment results.

In addition, personnel performing independent assessments shall have the necessary technical knowledge to accurately observe and evaluate activities being assessed. They shall have no direct responsibility for the work or organization they are assessing. The manager directly responsible for the work shall be considered as a customer of the assessment product (e.g., feedback resulting from observations of performance).

## 12.3 PROCESS

The type and frequency of independent assessments shall be based on the status, complexity, risk, and importance of the activities or processes being assessed. The criteria used for assessments shall describe acceptable work performance and promote improvement of the process or activity. Assessments shall also address management processes that affect work performance, such as planning, program support, training, and the performance of SMS Policy Core Safety Functions, when applicable.

The assessment shall focus on improving output quality and process effectiveness by emphasizing improvement methods. Independent assessment personnel shall base the evaluation on the approved system and not reinterpret or redefine the requirements. Assessments that are intended to evaluate the appropriateness of the approved system (or to interpret/define requirements of the system) may be performed, but only with the direction of Project Managers.

The independent assessment process shall include verification of the adequacy of corrective actions, including actions identified to prevent recurrence or to otherwise improve performance. Independent assessments that confirm acceptable performance in areas of an organization may reduce frequency and depth of future assessments. Areas of poor or questionable performance shall receive increased attention.

## 12.4 RESULTS

Documented assessment results shall be presented to the organization that was assessed and provided to the appropriate levels of management for review. Strengths and weaknesses affecting the quality of process outputs shall be identified so that Project Managers can take meaningful action to improve quality.

*TEAM DOE* will evaluate the assessment results to identify improvement actions and determine whether similar quality problems may exist elsewhere in the organization. Lessons learned from assessment results may be communicated to other organizations with similar activities or concerns.

*TEAM DOE* will track improvement actions until a resolution has been implemented and verified as completed.

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## **APPENDIX A. CANDIDATE PERFORMANCE MEASURES AND METRICS**

### **A.1 QUALITY ASSURANCE**

- Number of QA audits performed versus audits planned
- Initial effort and cost estimates versus actual (QA & CM)
- Number of functional process baselines planned versus actual
- Number of peer reviews
- Number of products peer reviewed
- Number of QA evaluations
- Number of products evaluated by QA
- Number of IV&V versus performed

### **A.2 SOFTWARE DEVELOPMENT AND MAINTENANCE**

- Application development completion of milestones versus planned
- Software resource utilization versus estimates
- Software effort and cost planned versus actual hours by task and labor category
- Software effort and cost planned versus actual cumulative hours
- Software effort and cost planned versus actual cost
- Number of open Trouble Tickets by application (for deployed applications)
- Number of closed Trouble Tickets by application (for deployed applications)
- Number of open Change Requests (enhancements) by application (for deployed applications)
- Number of closed Change Requests (enhancements) by application (for deployed applications)
- Number of project requirements over time (to promote idea of iterative builds, each build with a set of approved requirements; prevents analysis paralysis and scope creep)
- QA hours compared to number of software development hours – indication of product quality
- Software development hours compared to number products/builds released
- Software products supported
- Customer satisfaction of applications developed (e.g. surveys)
- Response time for Level 2 issues (application bugs and enhancements)
- Number of enterprise applications championed

### **A.3 PROJECT OR DEVELOPMENT METRICS**

- Number of changes after program is coded
- Percent of time required to debug programs
- Number of changes to time and cost estimates
- Percent error in forecast
- Number of coding errors found during formal testing
- Number of test case errors
- Number of test case runs before success
- Number of revisions to project plan
- Number of documentation errors
- Number of revisions to program objectives
- Number of errors found after formal test
- Number of error-free programs delivered to customer

- Number of process step errors before a correct package is ready
- Percent of programs not flow-diagrammed
- Percent of customer problems not corrected per schedule
- Percent of problems uncovered before design release
- Rework costs resulting from computer program
- Number of tasks for which actual time exceeded estimated time

#### **A.4 CUSTOMER-RELATED METRICS**

- Percent change in customer satisfaction survey
- System availability
- Mean time between system repairs
- Time before help calls are answered
- Number of user complaints per month

#### **A.5 NETWORK ENGINEERING**

- Network effort and cost planned versus actual hours by task and labor category
- Network effort and cost planned versus actual cumulative hours
- Network effort and cost planned versus actual cost
- Network resources utilization versus estimates
- Network completion of milestones versus planned
- Server availability statistics
- Network availability statistics
- Network response time
- Email Delivery (success/failure ratios)
- Response time to failures (although considered as part of system availability statistics)
- Internet access response time (assuming this can be effectively base-lined before performance measurement begins)
- Desktop connectivity/services availability statistics (combination of network/server availability statistics with net apps)
- Critical event mitigation statistics (virus, intrusion, etc.)
- SR statistics (assuming a richer Help Desk application)
- Successful/unsuccessful penetration statistics
- Call escalation statistics (to MS or Cisco, etc.)
- System deployments/updates statistics (hardware and software) within our purview
- New/refresh technology deployments statistics

#### **A.6 CYBER FORENSICS**

- Deliver Monthly Status Report on or before the 6th business day of the month: 95%
- Respond to requesting agency 2 hours after being notified that our services are required: 95%
- Arrive onsite or have arrangements for the onsite visit to the employee location within one day after accepting the case. (A 4-hour response will be achieved in most cases): 95%
- Deliver Final Report(s) to requesting agency by the negotiated deadline: 95%
- Maintain overall customer satisfaction rating of above average: 90%
- Customer retention based on repeat business (validated through Customer Satisfaction Survey): 90%
- Exceed customer expectations: 94%

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**A.7 CUSTOMER SERVICES**

- Hours of Support: Help Desk support will be provided 9 hours a day, 5 days a week (7 a.m.-5 p.m., Monday through Friday, excluding holidays)
  - Call Answering Time: Calls will be answered in 30 seconds or less on average from the second ring
  - Calls Dropped or Lost: Less than 5% of calls
  - Calls for general information and Help Desk software support that can be supported over the phone will be resolved 80% of the time on first contact
  - Desk-side support will be resolved 80% of the time on the first contact
  - Call Tracking: All requests for service will be recorded in the problem tracking database
  - E-Mail: Help Desk Support Staff will respond to all e-mail requests for service within one hour of receipt
  - Number of tier 1 tickets opened versus number closed
  - Number of tier 2 tickets opened versus number closed
  - Number of tier 3 tickets opened versus number closed
  - Number of Policy documents developed and implemented
  - Number of Baselines developed
  - Number of standards documents developed and implemented
  - Number of guidance documents developed and implemented
  - Number of statistical reports produced
  - Percent of monthly status reports provided versus expectations (1 per month?)
  - Number of outage reports provided versus number of outages
  - Number of projects going through IV&V versus number implemented
  - Number of patches implemented
  - Number of backups performed versus number of backups required.
  - Training provided versus training requests
  - Training assessment and sources provided within the first three months of the contract. Assessments provided every six months thereafter
  - Number of desktops installed versus number expected by the customer
  - Help Desk statistics provided by period:
    - ◆ Calls
    - ◆ E-mails
    - ◆ Other
    - ◆ Answered by Tier 1 / 2 / 3 / & 4 and Timeframes
    - ◆ Number of moves
    - ◆ Number of new installations
    - ◆ Trend reports produced
  - Number of Web sites upgraded to 508 compliance
  - Disk space utilization reports
  - Credit card purchases made, costs, reconciled
  - Bi-monthly report of Rad accounts and token utilization (by the 15th of the month)
  - Network diagram provided monthly
  - Outage reports within five days of outage
  - Monthly capacity reports
  - Video teleconference requested versus provided
  - Graphics presentations provided versus requested
  - Risk Assessments provided
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- Statements of Threat provided
  - Cyber security audits provided
  - Accreditation reviews provided
  - Technical system evaluations
  - Self assessments accomplished
  - TEMPEST and COMSEC reviews requested versus provided
  - Monthly schedule/labor/cost reports provided versus requirements

#### **A.8 INFORMATION ASSURANCE**

- Number of risk assessments completed versus assigned
  - Number of cyber security audits completed versus assigned
  - Annual Cyber security self assessment completed
  - Accreditation reviews completed by June 15, 2003 versus assigned reviews
  - Self assessments completed by June 15, 2003 versus assigned assessments
  - Rewritten cyber security plan completed by June 15, 2003
  - CSPP completed by June 15, 2003
  - Network intrusion detections completed versus assigned (quarterly & upon request)
  - Annual ISSR training completed (probably 1)
  - TEMPEST support provided versus assigned
  - COMSEC support provided versus assigned
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